Caldwell, Burleson county, Texas: during the night of the 25-26th the heaviest rainfall of the season occurred. The creeks rose to a greater height than has been known for many years.

Austin, Texas: a freshet occurred here during the night of the 25-26th, causing much damage. Bouldin's and Barton's creeks overflowed, the former being higher than ever before known. Two bridges over Bouldin's creek, near Austin, were washed away. Onion creek, a large tributary to the Colorado river, reached its highest stage since 1869, and overflowed a number of farms along its banks.

Navasota, Grimes county, Texas: the heaviest rain for many years fell during the night of the 25-26th. Two bridges at this place, over Cedar creek, were washed away.

Dallas, Texas: the heavy rains of the 26th caused the Trinity river to overflow, submerging the turnpike to the west of this place.

Mexia, Limestone county, Texas: on the 26th the Navasota river was reported to have been higher than known for several years.

Indianola, Red Willow county, Nebraska: a "cloud-burst" occurred near the Republican river during the evening of the 26th. Eleven of a party of seventeen persons who were encamped in Richman canyon were drowned. The canyon was flooded to a depth of fifteen feet.

Halifax, Nova Scotia: reports from Annapolis county state that on the 27th a remarkably heavy rain fell over an area three miles in length by five or six miles in width. The streams rose to dangerous heights. At Port Lorne numerous bridges and a mill were washed away.

Valley Mills, Bosque county, Texas: a remarkably heavy rainfall occurred here during the night of the 27–28th. Two thousand feet of railroad track and two culverts were washed away between this place and Clifton, a few miles northward. The Bosque river rose to a greater height than ever before known, overflowing farms along its banks and causing a large amount of damage. Several families were compelled to abandon their houses. Reports from Meridian on the 28th stated that the damage caused by the flood in Bosque county was estimated at $100,000.

Waco, McLennan county, Texas: the most destructive flood ever known here occurred on the 28th. A violent storm accompanied by very heavy rainfall prevailed during the night of the 27–28th. The Brazos river reached a point two feet above high water mark, and the fine cotton plantations along its banks were completely submerged. On the evening of the 30th the Brazos had fallen seven feet, but there were still about one hundred and fifty dwellings and business houses submerged. Seventeen bridges in McLennan county were washed away by the flood. It is estimated that the damage, independent of that sustained by the railroads, will aggregate $100,000.

Evansville, Indiana: a very heavy fall of rain occurred during the afternoon of the 28th. Damage estimated at $2,000 was caused by flooding of cellars in the northern part of the town.

Longview, Gregg county, Texas: the upper Sabine river overflowed on the 29th.

Laredo, Texas: on the 29th the Trio river was reported to have been six feet higher than ever before known.

Marlin, Falls county, Texas: on the 30th the surrounding country for a distance of several miles from the Brazos river was entirely submerged, resulting in great damage to all kinds of crops and the loss of much stock.

Calvert, Robertson county, Texas: on the 31st the Brazos river was five feet higher than any previous flood mark, and thousands of acres of land under cultivation were flooded.

TEMPERATURE OF WATER.

The following table shows the highest and lowest temperatures of water observed at the several stations; the monthly ranges of water temperature; the average depth at which the observations were made; and the mean temperature of the air:

Temperature of water for May, 1885.

Station.	Temperature at bottom.		Range.	Average depth, feet and tenths.	Mean temperature of the air at station.
	Max.	Min.			
	°	°	°		°
Atlantic City, New Jersey	63.7	50.7	13.0	4 9	54.8
Alpena, Michigan	60.5	40.0	20.5	12 2	46.5
Augusta, Georgia	74.5	65.2	9.3	8 0	70.0
Baltimore, Maryland	67.8	57.9	9.9	10 7	63.0
Block Island, Rhode Island	50.7	43.4	13.3	8 1	50.7
Boston, Massachusetts	55.8	43.3	12.5	19 7	52.3
Buffalo, New York	57.5	33.8	23.7	8 9	53.1
Canby, Fort, Washington Territory	60.2	51.1	9.1	14 4	52.6
Cedar Keys, Florida	82.9	74.7	8.2	7 9	75.1
Charleston, South Carolina	78.4	69.0	9.4	41 5	72.7
Chicago, Illinois	64.1	48.9	18.2	8 0	52.8
Chincoteague, Virginia	73.0	56.0	17.0	3 8	59.9
Cleveland, Ohio*	57.0	45.8	11.2	14 0	55.6
Detroit, Michigan	56.2	41.0	15.2	24 4	56.8
Duluth, Minnesota	53.1	35.6	17.5	9 9	47.0
Eastport, Maine	40.7	30.6	4.1	14 7	47.5
Escanaba, Michigan*	60.1	34.3	25.8	18 2	47.6
Galveston, Texas	82.5	70.5	12.0	12 9	76.2
Grand Haven, Michigan	69.0	46.2	22.8	19 0	52.9
Indianola, Texas	84.5	68.5	16.0	9 3	75 0
Jacksonville, Florida	83.4	73.4	10.0	18 0	73.7
Key West, Florida	87.2	82.2	5.0	17 0	80.4
Mackinaw City, Michigan*	47.5	35.8	11.7	10 0	44.4
Macon, Fort, North Carolina					
Marquette, Michigan					
Milwaukee, Wisconsin	50.8	41.9	8.9	8 0	49.7
Mobile, Alabama	81.3	71.0	10.3	17 3	71.7
New Haven, Connecticut	62.5	45.5	17.0	16 8	54.9
New London, Connecticut	55.7	43.4	12.3	12 2	54.5
New York City	60.0	48.0	12.0	13 8	56.2
Norfolk, Virginia	72.1	59.8	12.3	16 6	65.1
Pensacola, Florida	83.1	69.5	13.6	17 4	72.8
Portland, Maine	50.1	44.0	6.1	17 5	54.8
Portland, Oregon	64.2	53.8	10.4	61 5	58.9
Sandusky, Ohio	68.5	47.8	20.7	10 7	56.7
Sandy Hook, New Jersey	60.4	47.6	12.8	1 8	54.6
San Francisco, California	60.3	56.2	4.1	35 6	57.2
Savannah, Georgia	80.0	71.3	8.7	9 4	73.3
Smithville, North Carolina	79.0	66.0	13.0	10 6	69.2
Toledo, Ohio	70.2	47.5	22.7	13 0	57.9
Wilmington, North Carolina	78.1	68.4	9.7	14 4	70.1

* Record for the month incomplete—see text.

At Cleveland, Ohio, no observation was made on the 3d, owing to breakage of the instrument; at Escanaba, Michigan, observations were interrupted by ice on the 4th and 5th; at Mackinaw City, Michigan, no observations were made, on account of ice, from the 1st to the 6th.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for May, 1885, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 83.27 per cent. The percentages for the four elements are: Weather, 87.03; direction of the wind, 81.25; temperature, 81.03; barometer, 85.52 per cent. By geographical districts, they are: For New England, 79.14; middle Atlantic states, 82.86; south Atlantic states, 83.22; eastern Gulf states, 87.71; western Gulf states, 87.11; lower lake region, 79.68; upper lake region, 77.61; Ohio valley and Tennessee, 84.20; upper Mississippi valley, 83.69; Missouri valley, 80.55; north Pacific coast region, 82.31; middle Pacific coast region, 85.67; south Pacific coast region, 95.03. There were three omissions to predict out of 3,543, or 0.01 per cent. Of the 3,540 predictions that have been made, seventy-four, or 2.09 per cent., are considered to have entirely failed; one hundred and sixty-five, or 4.66 per cent., were one-fourth verified; four hundred and sixty-three, or 13.08 per cent., were one-half verified; six hundred and fifty-two, or 18.42 per cent., were three-fourths verified; 2,186, or 61.75 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

CAUTIONARY SIGNALS.

During May, 1885, one hundred and sixty-eight cautionary signals were ordered. Of these, ninety-four, or 55.95 per cent.,

were justified by winds of twenty-five miles or more per hour, at or within one hundred miles of the station. Twenty-one off-shore signals were ordered, of which number, eight, or 38.10 per cent., were fully justified both as to direction and velocity; twenty-one, or 100.0 per cent., were justified as to direction; and eight, or 38.10 per cent., were justified as to velocity. One hundred and eighty-nine signals of all kinds were ordered, one hundred and two, or 53.97 per cent., being fully justified. These do not include signals ordered at display stations where the velocity of the wind is only estimated. Of the above cautionary off-shore signals, fourteen were changed from cautionary. Three signals were ordered late. In forty-four cases, winds of twenty-five miles or more per hour were reported for which no signals were ordered.

COLD-WAVE SIGNALS.

During May, 1885, there were thirty-three cold wave signals ordered, of which number twenty-five, or 75.76 per cent., were justified.

RAILWAY WEATHER SIGNALS.

The following extract is from the May report of the "Alabama Weather Service," under direction of Prof. P. H. Mell, jr.:

The verification of prediction for the whole state was 98 per cent. for temperature and 97 per cent. for weather.

The following roads comprise this system: Western, of Alabama; Atlanta and West Point, of Georgia; South and North; Montgomery and Mobile; Mobile and Girard; Georgia Pacific; East Tennessee, Virginia and Georgia; Northeastern, of Georgia.

ATMOSPHERIC ELECTRICITY.

AURORAS.

The following reports of auroral displays have been recieved. It will be seen that the display on the night of the 11–12th, which was observed from central Montana to the New England coast, was most extensively reported. The display of the 13th was reported as exceptionally brilliant at Eastport, Maine:

4th.—Allison, Kansas, from 8 to 11.30 p. m.

6th.—Manchester, Iowa; Yutan, Nebraska.

7th.—Yutan, Nebraska.

8th.—Winnipeg, Manitoba; Yutan, Nebraska.

9th.—Fort Totten, Dakota: an auroral arch, with dark segment beneath, was observed from 10.30 to 12 p. m., altitude 15°. The display of the 9th was also observed at Webster, Dakota; Winnipeg, Manitoba; Vevay, Indiana, and Portsmouth, Ohio.

11th.—Bismarck, Dakota: a pale yellow auroral light in the northwestern sky, extending from the horizon to an altitude of 30°, was observed from 11 to 12 p. m.

11th.—Fort Bennett, Dakota: a faint aurora was observed from 12 p. m. to 1 a. m. of the 12th; it consisted of columns of pale light, varying in altitude from 9° to 15°; the display extended over 20° of the horizon; no arch was visible.

11th.—Moorhead, Minnesota: a faint aurora was observed in the north at 10.30 p. m.; no streamers were visible; the display continued until past midnight.

11th.—Duluth, Minnesota: a pale green auroral light was visible in the north from 8.25 p. m. until the morning of the 12th.

11th.—Escanaba, Michigan: a light yellow auroral light was visible from 10.08 p. m. until midnight.

11th.—Manistique, Michigan: from 9 p. m. to 2 a. m. of 12th.

11th.—Alpena, Michigan: an aurora appeared at 10.40 p. m. consisting of a diffuse light in the northwestern sky; no streamers were visible; the display ended at 1.40 a. m. on the 12th.

11th.—Oswego, New York: a faint auroral arch was visible from 11 p. m. until the morning of the 12th.

11th.—Cambridge, Massachusetts: an auroral arch was visible at 8.45 p. m.

11th.—Contoocook, New Hampshire: diffuse aurora at 9 p. m.

11th.—Portland, Maine: an auroral arch was observed from 9.45 p. m. until 1.33 a. m. on the 12th; it was of irregular form and extended over 90° of the horizon.

11th.—Gardiner, Maine: a faint aurora was observed at 9 p. m.; the display gradually grew brighter, and at 1 a. m. of the 12th was very brilliant, with flashing beams.

11th.—New Haven, Connecticut: aurora from midnight until 1.15 a. m. of 12th; there were no marked features.

11th.—Winnipeg, Manitoba; Boyne, Michigan; Le Roy, New York; Somerset, Massachusetts and Charlottetown, Prince Edward's Island.

12th.—Cornish, Maine: aurora at 2 a. m., the light extending to an altitude of 15°.

13th.—Manistique, Michigan: aurora from 8 to 11 p. m.

13th.—Northport, Michigan: a dim auroral light with a few beams extending to an altitude of 45° was observed at 9 p. m.

13th.—Alpena, Michigan: an aurora was first noticed at 8.15 p. m.; it consisted of an arch of pale green color from which beams, with an apparent motion from east to west, extending upward, some reaching an altitude of 30°.

13th.—Birmingham, Michigan: at aurora was observed at 9 p. m.

13th.—Ann Arbor, Michigan: an aurora appeared at 8 p. m., with streamers reaching nearly to the zenith.

13th.—Grampian Hills, Pennsylvania: a brilliant aurora was visible from 8.50 to 10 p. m., when the display became obscured by clouds.

13th.—North Volney, New York: faint aurora in the north at 8.45 p. m.

13th.—Mount Washington, New Hampshire: an aurora was observed from 9.20 to 11.10 p. m.; it consisted of waves of bluish light extending from the northern horizon to the zenith.

13th.—Bangor, Maine: "brilliant auroral light flashing beyond the zenith."

13th.—Orono, Maine: at 9 p. m. auroral streamers extended from all parts of the horizon to the zenith.

13th.—Eastport, Maine: an auroral display of unusual brilliancy was observed from 8 to 10.30 p. m.; from 9.20 to 9.45 "merry dancers" of pale yellow color appeared, having a motion from west to east; incomplete arches and nebulous masses were seen at all points between the altitudes of 30° and 45° and moved toward the zenith; dark segments also appeared on both the northern and the southern horizon. The effect of the aurora on the telegraph line between this place and Saint John, New Brunswick, was perceptible, although the current was not sufficiently strong to permit the transmission of signals.

The display of the 13th was also observed at the following places: Winnipeg, Manitoba; Westerville, Ohio; Franklin, Pennsylvania; Montreal, Quebec; Rowe, Massachusetts; Newport, Vermont; Charlottetown, Prince Edward's Island; Halifax and Sidney, Nova Scotia.

16th.—Cambridge, Massachusetts: a whitish band, apparently an auroral light, was observed in the north at 12.20 a. m.

18th.—Winnipeg, Manitoba.

25th.—Madison, Wisconsin: an aurora in the form of a bright arch, with streamers extending to an altitude of 45°, was observed at 12 p. m.

25th.—Saint Paul, Minnesota: a faint auroral arch was observed in the north at 1.30 a. m., being about 12° in height at the centre and extending over 30° of the horizon. At 2 a. m. numerous beams of a variety of colors appeared between the northeast and northwest and extended to an altitude of 70°; the streamers appeared and disappeared in rapid succession until 2.05 a. m., when flashes of light were observed moving towards the zenith. The telegraph lines running between Saint Paul and points to the northwestward were so affected during the display as to seriously interrupt communication.

26th.—Bismarck, Dakota: an auroral display was observed from 3.05 a. m. until daylight; it consisted of a greenish-yellow light, extending to an altitude of 35°; occasional streamers were also seen.

26th.—Grand Haven, Michigan: an aurora was visible from 1.45 to 2.50 a. m.; the light extended to an altitude of 15° and covered 40° of the horizon.